



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Connor A. Schroeder	Project Number J1531
Project Title Cytoplasmic Streaming: The Effects of an Electromagnetic Field	
Abstract Objectives/Goals The objective of my project, Cytoplasmic Streaming The Effect of an Electromagnetic Field, is to see if an electromagnetic field (EMF) could either slow or quicken the process of cytoplasmic streaming (cyclosis). Methods/Materials I used many methods for doing my project. First I would have a control with no EMF and would time the speed of the chloroplast moving one cell length. I had to use the same cell for each test because cyclosis rates differ from cell to cell. Then I would gradually increase the EMF's strength to 14 gauss-- gauss is the measurement of an EMF's strength-- and tested all of those using the same cell and length. Results In my project I found that as I increased the gauss of the EMF, the cytoplasmic streaming velocity increased from 56 seconds to 12 seconds to travel the same cells length. My discovery was absolutely contrary to my hypothesis. Conclusions/Discussion My hypothesis states that as the electromagnetic field's gauss increases the cytoplasmic streaming will become slower. Now that I have all of my test results, I completely disagree with my hypothesis. The cytoplasmic streaming's velocity increased by a total of about 43 seconds from no field to 14 gauss. This was a major discovery for me and I began to question if an electromagnetic field could effect the oxygen intake and carbon dioxide could change due to a velocity change in cyclosis. This in turn could be connected to green house gases in our atmosphere because of the fact that carbon dioxide is a major green house gas.	
Summary Statement My project is to see if an Electromagnetic field could effect the process of cytoplasmic streaming.	
Help Received Mr. Demcak - information , Mr. Peterson - information / equipment	